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Introduction

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The six papers published here were presented in the symposium, "The Future of Taxonomy," on June 18, 2003 as part of the celebrations for the 150th anniversary of the California Academy of Sciences. The symposium was presented at the annual meeting of the Pacific Division of the American Association for the Advancement of Science in June 2003 at San Francisco State University.

Although it was not planned that way, all of the papers focus upon a common theme. Our practices of classifying and naming, which go back to Linnaeus and even earlier, were undermined by Darwin and today seem on the verge of collapse. Various changes have been suggested, including going so far as to abandon both binomial nomenclature and categorical rank. The PhyloCode, which would effect such changes, is a good example of proposed reorganizations.

Michael Ghiselin treats classification as the organization of knowledge, and on that basis provides a broad overview of the philosophy of systematics. He explains and updates the idea that species are concrete, particular things (individuals) rather than abstract kinds of things (classes). Treating the species category as a natural kind with its own laws of nature forms the basis of an argument in favor of having one and only one species concept. That argument could be used to justify having at least one rank.

Charles Godfray treats taxonomy as information science, and provides an irreverent view of both past and current practice. Although critical of what some consider the vices of the subject, he suggests that much of traditional practice might be maintained, and expresses skepticism about some of the recent proposals, including the PhyloCode. As he sees it, the situation calls for the creative application of computer technology.

Peter Forey takes a new look at Linnaeus, and asks whether he has much relevance for us moderns. The discussion seems timely, because the current approach — with its binomials and categorical ranks — largely derives from him. Forey suggests that we should maintain some of the older practices. In effect, he advocates keeping ranks, but not taking them seriously.

Kevin de Queiroz treats species as lineages, and on that basis seeks to unify the diverse views about that category. His views are somewhat different from Ghiselin's, but the idea of treating taxa as lineages is consistent with their individuality and is widely accepted. It is also the basis for discussion of how we name taxa, something to which both Ghiselin and de Queiroz have given a great deal of thought, and something that is discussed in more detail in the remaining two papers.

Mikael Härlin tackles the problems of how we name taxonomic groups. If populations and lineages are individuals, their names are proper names, and have no defining properties. One can fix the reference of the name by "pointing" at the common ancestor, but there is a serious tradeoff here. Although we are provided with a strictly objective way to attach a unique identifier to a lineage,

our idea of what that lineage is may change through time. Therefore, as science evolves we will find ourselves using the same name for different things.

Alessandro Minelli, who has been much involved with the International Code of Zoological Nomenclature, discusses the "legalistic" significance of taxonomic publications. He gives reasons for changing the rules, and also for coming up with a more modern way of linking the taxon's name to the taxon itself and to the scientific literature.

Taken together, the six papers all point in the same general direction. Taxonomy is re-examining its practices, even with respect to such central activities as bestowing names upon the formal units in classification systems and the methods of dissemination of taxonomic information. We are in the midst of a lively debate, the outcome of which is hard to predict. However, it seems inevitable that there are some important changes ahead in the future of taxonomy, and that many will be driven by the growing market outside of systematic biology for taxonomic information. Binomial nomenclature and categorical rank may be abolished altogether. Alternatively, traditional practice may be maintained, perhaps with more modest adjustments. In either case, taxonomy will be cultivated with a better understanding of its goals and practices.

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